BISS Biodiversity Information Science and Standards

Biodiversity Information Science and Standards 3: e37058
doi: 10.3897/biss.3.37058

OPEN ACCESS

Conference Abstract

FuTRES: Functional Trait Resource for Environmental Studies

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Received: 10 Jun 2019 | Published: 18 Jun 2019

Citation: Balk M, Walls R, Guralnick R, Davis E, Deck J, Emery K, Bernor R, Brenskelle L, Boileau A (2019) FuTRES: Functional Trait Resource for Environmental Studies. Biodiversity Information Science and Standards 3: e37058. https://doi.org/10.3897/biss.3.37058

Abstract

Functional traits are the features of organisms that directly interact with the environment. Studying change and variation in these traits across space, time, and taxonomy can inform how species have responded to environmental and climatic change, how communities are assembled, and other eco-evolutionary questions. Trait data are collected at the individual level; however, animal trait databases often report these data at the species level, undermining their value for researchers who want to look at variation within species and rendering trait data ambiguous when taxonomy is updated. Additionally, these data are often recorded in auxiliary fields, such as “field notes” or hidden in supplementary materials or published tables, making them difficult to recover by researchers. Furthermore, animal trait data from paleontological, zooarchaeological (from archaeological sites), and neontological specimens are typically curated in separate forums and formats that are not easily integrated to provide perspective across the entire range of time. We are developing

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a toolkit to overcome these challenges called FuTRES: Functional Trait Resource for Environmental Studies. We seek to make these data accessible, standardize trait descriptions across Vertebrata, and teach (future) scientists how to create FAIR (findable, accessible, interoperable, and reusable) trait datasets. To make data more FAIR, FuTRES employs ontologies, a logical framework for relating terms to search datasets and standardizing traits across datasets. FuTRES builds off existing ontologies and standards, such as UBERON for anatomical terms and PATO and OBA for trait terms, as well as create new terms that are general enough to be used for all vertebrates and multiple disciplines. This talk will showcase the semantic framework underpinning FuTRES, describe how we are linking diverse trait datasets to ontologies and, therefore, each other, and report the results of a preliminary analysis of integrated datasets.

Keywords

specimen, variation, ontology, trait, neoecology, paleoecology, zooarchaeology

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Presented at

Biodiversity_Next 2019